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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/606,938

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Chan-Jung Park

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1762

MAIL DATE

DELIVERY MODE

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/606,938

Applicant(s)

PARK ET AL.

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,9,19-23 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Claims 2, 3, 8, 10-18 and 24 are canceled*

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The Amendment filed July 24, 2007 has been received and entered. With the entry of the amendment, claims 2, 3, 8, 10-18 and 24 are canceled, and claims 1, 4-7, 9, 19-23 and 25 are pending for examination.

#### *Claim Rejections - 35 USC § 112*

2. The rejection of claims 9 and 23 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to applicant's amendments and clarifications of July 24, 2007.

#### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 4-7, 9 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/13999 A1 (hereinafter '999) in view of Sato et al (US 2001/0023593).

\*\*\* The Examiner notes that '999 is in Japanese, so Tomonari (US 2003/0170382), which is the US national stage application of '999, has been used as the translation. Therefore, references to paragraph numbers are to Tomonari.\*\*\*\*

Claims 1 and 9: '999 teaches a method of providing antibacterial activity to a surface of a body using nano-sized metal particles. Paragraphs [0012], [0023], [0024], Table 1 (after paragraph [0115]) and paragraph [0138]. A volatile solution dispersed with nano-sized metal particles is provided and coated onto the surface of a body. Paragraphs [0081]-[0085] (Example 16), Table 1 (after paragraph [0115]), [0117] (example 20), [0133], and [0028]. The body is dried and thermally treated, depositing nano-sized metal particles onto the body. Paragraphs [0028] and [0133]. The thermal treatment is performed at an elevated temperature, such as 120 degrees C. Paragraphs [0028] and [0133]. The metal particles can be silver or copper. Paragraphs [0012] and [0081]—

[0085] (example 16). The body to be coated can have various commercial and domestic purposes and can be made of various materials, and can serve to provide antibacterial function. Paragraph [0138].

Claim 7: the nano-sized metal particles have a sterilizing function. Paragraph [0138].

Claims 19-21: the metal particles are desirably 5-50 nm in size, and can be 10.4 nm (example 1) or 8.8 nm (example 16) in size, for example. Paragraph [0012] and Table 1 (after paragraph [0115]).

Claim 22: the coating of the volatile solution with the metal particles onto the surface of the body can be by deposition. Paragraph [0028].

'999 teaches all the features of these claims except that (1) the body to be coated is a home appliance or filter body in an air cleaner, (2) the heat treatment at 150 degrees C (claim 4) and the amount of particles per solution (claims 5-6). The Examiner notes that '999 provides that the initial colloidal solution is at least 1 wt% metal particles (paragraph [0011]), however, for coating this initial solution is thinned with dispersing medium, such as water and other non-aqueous solvents (paragraphs [0024] – [0025]).

Sato teaches that it is well known when forming an air conditioner (a home appliance, as indicted by claim 9), it is well known to apply a compound of silver or copper or the like to various components of the air conditions, including the filter, heat exchanger, blower and the like in order to provide an antibacterial and mold-proofing finish. Paragraph [0002].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '999 to provide the antibacterial coating composition containing the silver or copper colloid particles onto various components to be used in an air conditioner, including a filter, etc. as suggested by Sato, with an expectation of providing a desirably antibacterial surface coating, because '999 teaches an antibacterial coating composition containing silver or copper metal particles to provide an antibacterial coating on a body and Sato teaches that a body that is known to need such a coating is components of an air conditioner, such as the filter, etc. It would further have been obvious to provide the heat treatment after application of the coating at 150 degrees C, with an expectation of desirable coating results, because '999 teaches to provide heating after application, with an exemplary heating of 120 degrees C, because as discussed in MPEP 2144.05, "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)". Similarly, it would further have been obvious to optimize the amount of particles used in the solution applied to the body with an expectation of desirable coating results, because as discussed before, "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such

concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)".

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over '999 in view of Sato as applied to claims 1, 4-7, 9 and 19-22 above, and further in view of Mayhue (US 4067205).

'999 in view of Sato teaches all the features of these claims except that the filter of the air conditioner is copper or stainless steel.

However, Mayhue teaches an air conditioning system for home use. Column 1, lines 5-15. Mayhue teaches the system can have a filter desirably made from stainless steel or chrome plated copper. Column 4, lines 1-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '999 in view of Sato to apply the coating on a stainless steel or copper filter for the air conditioning unit as described by Mayhue with an expectation of providing a desirably protected surface, because '999 in view of Sato provides coating components of air conditioners, including filters, with antibacterial metal particle containing coating and Mayhue teaches a conventional filter for an air conditioner can desirably be made from stainless steel or copper.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et al (US 5897673) in view of Zhou et al (US 5804057).

Nishida teaches a method of providing antibacterial activity on the surface of a body that can be a filter body. Column 1, lines 5-20 and column 22, lines 55-65. A volatile solution dispersed with nano-sized metal particles is provided that is coated onto the surface of the body. Column 6, lines 15-60, column 8, lines 50-60 and column 9, lines 55-65 (particles of silver would at least be present during the precipitation, and 0.02 micron would be 20 nm). The body is dried and thermally treated. Column 9, lines 55-65. The thermal treatment can be at 80 degrees C, for example. Column 9, lines 55-65 (temperature during the ion-exchanging reaction). The metal particles can be silver particles. Column 9, lines 55-65. The coating can be by an ion exchange (adsorption) reduction type deposition, where only silver is selectively attached to the body. Column 9, lines 55-65, column 7, line 30 through column 8, line 65 and column 6, lines 55-65.

Nishida teaches all the features of these claims except that electrolysis of the silver solution occurs as part of the ion exchange reduction deposition.

However, Zhou teaches that it is well known that a silver ion exchange type reduction reaction can conventionally occur while electrolysis is occurring. Column 4, lines 20-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nishida to provide the ion exchange reduction reaction



with electrolysis as described by Zhou with an expectation of providing a desirably coated surface, because Nishida provides coating silver using an ion exchange reduction reaction and Zhou teaches that such a reaction can conventionally desirably occur during electrolysis.

### *Response to Arguments*

8. Applicant's arguments filed July 24, 2007 have been fully considered but they are not persuasive.

(A) As to the rejection of claims 1, 4-7, 9 and 19-22 using WO 02/13999 ('999) in view of Sato, applicant argues that '999 requires that the metal particle suspension include a sulfur compound, while the independent claims 1 and 9 of the present application do not require this use of a sulfur compound. The Examiner has reviewed these arguments, however, the rejection is maintained. While '999 may require the use of a sulfur compound with the metal particles, there is no requirement in the present claims to exclude or prevent the use or presence of sulfur compounds, and therefore, the present claims are inclusive of such a use, and the teaching in '999 overlaps in the scope of what is required by the claims.

Applicant further argues that Sato teaches that the antibacterial agent is required to be volatile and that the release rate of the antibacterial component is based on humidity, while independent claims 1 and 9 of the present invention utilize nano-sized particles of silver deposited on the surface of a filter body in an air cleaner or home

appliance body, which are known to those skilled in the art not to be volatile and are not released into the air. The Examiner has reviewed these arguments, however, the rejection is maintained. Applicant has only argued as to what Sato teaches as to the volatility/humidity release rate of the antibacterial agent, and in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The rejection uses the combination of '999 in view of Sato, with '999 providing the claimed use of nano-sized metal particles, such as silver, to provide an antibacterial coating, and Sato provides the suggestion of a desirable substrate to apply such particles to.

(B) As to the rejection of claim 25 using '999 in view of Sato and further in view of Mayhue, applicant provides the same arguments as provided with regard to '999 in view of Sato in section (A) above. The Examiner has reviewed these arguments, however, the rejection is maintained for the same reasons as given in section (A) above since the same arguments are applied.

(C) As to the rejection of claim 23 using Nishida in view of Zhou, applicant argues that Nishida teaches that the antibacterial particles are incorporated into fibers, as opposed to be located only on the surface of the body as is set forth in claim 23 of the present application, and teaches away from the present invention. The Examiner has reviewed these arguments, however the rejection is maintained. Nishida provides that

63 "... the fine particles can be completely and uniformly dispersed in an carried by the entire fibers with ease. However, it is also possible to make the fibers have so-called domain structures having a difference in concentration of the fine particles between the surface area and the center area. The mode of such fibers does not overstep the scope of the present invention." (column 6, lines 58-65). Thus, at the least Nishida provides that particles would be provided throughout the fibers, including on the surface of the fibers. Applicant argues that in claim 23, the particles can be located "only" on the surface of the body (fibers). The Examiner disagrees. The claim requires that particles be located on the surface ( "be selectively attached to the surface"), however, there is no requirement that the particles be only on the surface. Nishida provides that there can clearly be selective attachment (the method of application, and also the domain structures) so that silver is attached to the surface. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is also unclear where the specification provides that the particles are applied "only" to the surface of the body.

### *Conclusion*

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KATHERINE BAREFORD  
PRIMARY EXAMINER